27. The energy consumption efficiency improving agent of claim 7 wherein said solvent is isopropyl alcohol.

REMARKS

The amendment of claim 2 is supported by original claim 3 and throughout the specification. The remaining amendments are for purpose of improving the form of the claims and/or are otherwise self-explanatory.

New claim 12 is supported by the amounts of polymer binder shown, e.g., in Example 1 on page 19 and Example 6 on page 32 of the specification, and the amount of solution forming agent in, e.g. Example 1 on page 19, and Example 3 on page 28, while new claim 13 is supported by the lack of any antislipping agent in Example 2 and 6 on pages 28 and 32 and the amount of 3.77 wt.% shown, e.g. in Example 1 on page 19.

New claims 14 to 16 are supported in the specification on page 10 line 27 to page 11 line 2; new claims 17 to 19 are supported on page 11, lines 7 and 8; new claims 20 to 22 are supported on page 13, lines 22 and 23; and new claims 23 to 25 are supported on page 17, lines 7 and 8 of the specification.

New claim 26 is supported by original claim 6, and new claim 27 is supported by original claim 7.

Reconsideration of this application, as amended, is respectfully requested.

The rejection of claims 1, 7 and 8 under 35 U.S.C. 112 second paragraph has been overcome by the cancellation of claim 1 and the amendment of claims 7 and 8 to eliminate the phrase "such as."

Claims 1 to 11 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Craven (U.S.P. 3,878,147) in view of The Encyclopedia of Polymer Science, Vol. 3, November 1985, pg. 552 (Encyclopedia). Craven discloses compositions comprising an elastomer, a solvent for the elastomer, and dispersed, hard, inorganic particles, which are intended to be applied to surfaces such as vehicle tires and the soles of footware for the sole purpose of increasing the friction between the described surfaces and roads and the like made slippery by sleet, snow or ice. In contrast, while applicant's compositions are also capable of providing improved traction on slippery surfaces, they actually have a much broader purpose, namely to provide improved energy efficiency in the operation of the coated articles such as tires on surfaces under a variety of conditions

including wet and dry as well as icy surfaces. This is manifested in different ways, as shown in the data of Tables 1 to 5 such as improved fuel consumption, traveling time, traveling distance and number of accelerator operations when applicant's composition is applied to the surface, as compared with conditions when such composition is not applied.

The improvements contributed by applicant's coating are dependent on certain conditions including primarily two which are not disclosed by Craven, namely a thickness of the film resulting from the coating of 10 μm or less, and a viscosity of the polymer of making up such film of 100,000 cp or less. Of these conditions, the most critical is the thickness of the film which is based on applicant's discovery that the thinner the film, the greater the energy conservation even at thicknesses somewhat under 10 μm. However, 10 μm is a practical maximum of film thickness for the purpose at hand and such maximum thickness is generally lower than any film coating for the improvement of traction known in the prior art.

In discussing the disclosure of Craven in support of the rejection, the Examiner states that Craven's dry film has a "thickness of about 0.5-5 mls" and that "about 0.5 mils is equivalent to 10 μm." Applicant takes issue with this

position in view of the criticality of the thinness of applicant's films. Thus, Craven's minimum thickness is 0.5 ml, equal to 12.7 μm which is 27% greater than applicant's maximum of 10 μm, a critically different amount in view of the sensitivity of the thickness of the film in applicant's invention. Furthermore, there is nothing in the Craven disclosure which would render obvious under 35 U.S.C. 103 the reduction of Craven's minimum of 12.7 μm to applicant's maximum of 10 μm.

The rejection seeks to overcome the failure of Craven to disclose or suggest applicant's films by relying on the disclosure of the Encyclopedia reference of various coating methods and the ranges of viscocity of such coatings, stating that the viscosity "is a results effective variable" and that "It would be obvious to optimize the viscosity of the coating composition to meet the requirements of the coating method to be utilized." With regard to this position, it should be noted that the Encyclopedia does not disclose anything which would lead the skilled person to decrease the minimum film thickness of 12.7 μm, disclosed by Craven to applicant's maximum of 10 μm and that, with regard to optimization, it is not the method of application that is important, but rather the results obtained in terms of energy consumption efficiency. Note that this is not an arbitrary distinction in view of the results in energy efficiency shown in Tables 1 to 5 of applicant's

specification and that an application of the broad concept of energy efficiency is not shown in either Craven or Encyclopedia. In view of this, it is not seen how the teachings of the references could be combined so as to render applicant's invention obvious to a person skilled in the art.

Twelve further claims in excess of twenty are added. Accordingly, please charge the fee of $36.00 to Deposit Account No. 10-1250.

Applicant has added a total of 13 claims. Accordingly, please charge $234.00 for these 12 additional claims (at $18.00 each) to Deposit Account 10-1250. If there are any additional charges, please charge to the same Deposit Account No.

Applicant respectfully requests a one-month extension of time for responding to the Office Action. Please charge the fee of $110.00 for the extension of time to Deposit Account No. 10-1250.

Respectfully submitted,

Jordan and Hamburg LLP

By Frank J. Jordan
Frank J. Jordan
Reg. No. 20,456
Attorney for Applicant

by and,

By Marvin Turken
Marvin Turken
Reg. No. 18,330
Attorney for Applicant

Jordan and Hamburg LLP
122 East 42nd Street
New York, New York 10168
(212) 986-2340

FJJ/MT/cj
Enc.

APPENDIX I

AMENDED CLAIMS WITH AMENDMENTS INDICATED THEREIN BY BRACKETS AND UNDERLINING

2. (Amended) An energy consumption efficiency improving agent comprising a mixture of a flexible polymer binder and a solution-forming agent, which is applied to an object [to] in the form of a thin film [of] having a viscosity of 100,000 cp or less and a thickness of 10 μm or less [throughout on a finely uneven surface of the object].

3. (Amended) The energy consumption efficiency improving agent according to claim 2, [comprising a mixture of a] wherein said flexible polymer binder [which] adheres to an organic material and an inorganic material and has a viscosity of 100,000 cp or less, and [a] said solution-forming agent [necessary to make] is present in an amount resulting in the viscosity of the mixture being 100 cp or less.

4. (Amended) The energy consumption efficiency improving agent according to claim 2, [comprising a mixture of a flexible polymer binder which adheres to an organic material and an inorganic material and has a viscosity of 100,000 cp or less,] further comprising an antislipping agent comprising fine particles of an average particle diameter of 10 μm or less[, and a solution-forming agent necessary to make the viscosity of the mixture 100 cp or less].

5. (Amended) The energy consumption efficiency improving agent according to [any one of claims 2 to 4] claim 2, wherein a base material of the polymer binder is at least one selected from the group consisting of polyethylene; a methyl, phenyl, chloro, hydroxy, acetoxy, or cyano derivative of polyethylene; polybutadiene, a methyl or chloro derivative of polybutadiene; a copolymer of [the] said polyethylene derivative and [the] said butadiene derivative; silicone; polysulfide; and polyurethane.

6. (Amended) The energy consumption efficiency improving agent according to [any one of claims 2 to 4] claim 2, wherein a base material of the polymer binder is at least one selected from the group consisting of silicone; polysulfide; polyurethane; modified epoxy resin; and modified [acryl] acrylic resin

which are generated by condensation action of an external substance [such as water] during adhesion.

7. (Amended) The energy consumption efficiency improving agent according to claim [3 or 4] 2 wherein the solution-forming agent is a solvent which is capable of diluting the binder, including a solvent which dilutes the binder by colloid formation[, such as alcohols including isopropyl alcohol].

8. (Amended) The energy consumption efficiency improving agent according to claim 4, wherein the antislipping agent is a finely particulate inorganic material mainly comprised of silicon oxide, aluminum oxide, cerium oxide, or silicon carbide, or a finely particulate organic material [such as a ground nutshell or a walnut].

9. (Amended) An energy consumption efficiency improving method, comprising applying the energy consumption efficiency improving agent as set forth in any one of claims [1 to 4] 2 to 8 to an object to form a thin film of [a viscosity of 100,000 cp or less and a thickness of] 10 μm or less on a surface of the object.

10. (Amended) An article improved in energy consumption efficiency having a contact surface to be brought into contact with a surface of a support, and a thin film formed on the contact surface by application of the energy consumption efficiency improving agent as set forth in any one of claims [1 to 4] 2 to 8, the film having a [viscosity of 100,000 cp or less and a] thickness of 10 μm or less.